

We claim:

1 1. A method for lighting an inductive plasma in a plasma
2 processing apparatus having a matching network, the method
3 comprising the steps of:

4 determining a matching condition under which the matching
5 network is tuned to a capacitive plasma;

6 presetting the matching network at the matching condition
7 determined in said determining step;

8 lighting a capacitive plasma in accordance with the preset
9 matching condition and at a desired power exceeding a power
10 required to maintain the capacitive plasma by an excess power;
11 and

12 allowing an inductive plasma to light due to the excess
13 power.

2 2. A method according to claim 1, wherein the plasma lit in
3 said lighting step is a second plasma, and said determining
4 step further comprises:

5 lighting a first plasma;

6 setting a power delivered to the first plasma at not more
7 than about 20 watts;

8 allowing the matching network to tune to the first plasma
9 as a capacitive plasma; and

10 recording the matching condition under which the matching
11 network is tuned to the first plasma.

1 3. A method according to claim 1, wherein the plasma
2 processing apparatus includes a coil for delivering power to
3 the plasma, and a current produced in the coil due to the
4 excess power causes the inductive plasma to light.

1 4. A method according to claim 1, wherein the matching
2 condition determined in said determining step is a condition
3 under which the capacitive plasma is maintained in a steady
4 state.

1 5. A method according to claim 1, wherein the inductive plasma
2 is lit in a chamber of the plasma processing apparatus having a
3 gas pressure in the range of approximately 0.3 mTorr to 20
4 mTorr.

1 6. A method according to claim 1, wherein after said lighting
2 step, the matching network changes from the preset matching
3 condition to a matching condition under which the matching
4 network is tuned to the inductive plasma.

7. A method according to claim 1, wherein the desired power is greater than about 20 watts.